"Please touch the plant on your way up the stairs..."

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ABSTRACT
We are aware of global concerns of sustainability and are encouraged on many fronts to modify our behaviour to save the planet but sometimes this understanding is more intellectual than motivated.

An opportunity was identified within the university environment to activate a pilot study to investigate the level of voluntary student engagement in saving energy if a plant/digital interface were introduced.

We postulate that people may be more inclined to participate in a "green" activity if they are more directly aware of the benefits. This project also seeks to discover if the introduction of nature (green plants) as the interface would encourage users to increase participation in socially responsive activities.

Using plants as the interface offers an immediate sensory connection between the participants and the outcome of their chosen actions. This may generate a deeper awareness of the environment by enabling the participant to realise that their one small action in an ordinary day can contribute positively to larger global issues.

Author Keywords
Tangible Interface, Awareness, Sustainability, Built Environment, Plants

ACM Classification Keywords
H5.2 User Interfaces: Haptic I/O

INTRODUCTION
Many worthwhile projects that promote awareness of green issues, such as the lowering of energy or water usage in a building, attempt to connect the individual's personal actions to the more global issue of greenhouse gas reductions by using digital networked methods. For example, if the users of a building have been frugal on water or air-conditioning usage for the week, a digital readout of the amount of water or energy saved is displayed in a prominent position to applaud the participants' contribution to carbon reduction. While this method of using digital devices to transmit information is useful, it lacks the emotional connection between one's action and the more distant idea of saving the planet

INITIAL WORK
This demo presents initial work on our idea of examining the outcomes of an installation that enables plant-human interaction via a digital networked system.

Plant Human Interaction
In a way, this project is about the use of human-digital interfaces in promoting green awareness but this experiment intends to examine a method that can go beyond the linear correlation of action and digital printout. By designing an installation that involves plants as the input interface, it enables us to explore ideas of bringing the subject matter into our everyday lives without having to rely solely on digital representations, symbols or metaphors to encourage interaction. Rather than relying on screens or digitally augmented objects, the project seeks to discover the impact of providing real plants augmented by capacitive sensors as the only interfaces. The intention is to encourage users to take a very small action of taking the stairs instead of the lift. An immediate but a very small reward is that they will be able to keep these plants alive. The small action, however, will lead to a much larger contribution to keep our environment more sustainable. The aim of this project is to make people aware of the link between small actions and their much broader consequences.

Plant Digital Connection
Plants conduct electricity and so it is possible to enable leaves to become a collection of touch sensors which a microcontroller can read. The microcontroller in turn can make this data available to the Internet through an external server that can store history of user interactions.

BACKGROUND
It was noticed that the two lifts in D block of Queensland University of Technology (QUT) were often used by students going from the Ground floor to the next level even though the stairs were right beside the lifts and that people needed only to climb the stairs for one floor.

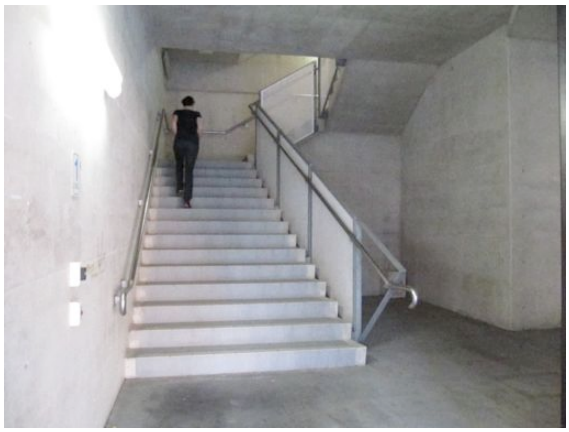

Figure 1. Staircase on Ground Floor - possible planter location at the bottom right hand side of stair railings

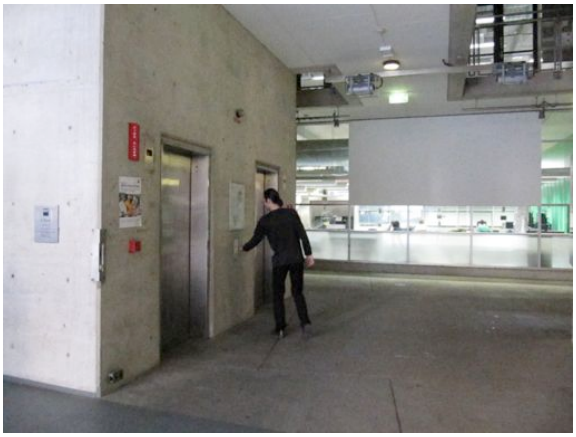

Figure 2. Ground Floor showing location of lifts with stairs on left side of the lifts not shown in picture

CASE STUDY

The experiment in this case study is set up to offer our community (mainly students) the opportunity to lower their building's energy use by using the stairs instead of the lifts. They are requested to touch the leaves of the plants located strategically near the stair doorway and at the bottom of the stairs when they take the stairs. Touching the leaves activates the digital transmission and records that a user has used the stairs instead of the lifts. This, in effect, is the small step he or she takes to keep our environment green.

The "reward" is that the plant will be watered when a certain level of energy savings has been met which also signifies a collective effort made by a number of students consciously deciding to take the stairs instead.

Data regarding frequency, at what times of the day and the number of times the plant is being touched will be compiled to chart human-interaction with this proposed idea

Real time data in terms of energy saved or personally expended when stairs were used instead of the lifts will be posted on the existing large screens just beside the lifts

Estimated amount of energy used to power the lifts will be used to compare amount of energy saved by using the stairs This experiment is intended to run for a couple of months during the semester.

Figure3. Experiment showing initial touch interface prototype

ANTICIPATED OUTCOMES

As the experiment has not been fully operational, no findings have been obtained for this conference yet. We anticipate data gathered to be used for analysis of energy usage, health benefits and social engagement.

We postulate that the direct experiential interface of the green leaves of this experiment will provide a heightened awareness of one person's small action being able to contribute to the larger activity of reducing greenhouse gas emissions on a global level. The touching of the leaves provides an immediate connection between our physical senses and the more removed idea of global energy reduction or long-term health improvement. .This type of feedback may play a role in raising awareness and persuading positive actions

A number of conclusions are sought from this experiment. Are people more inclined to participate in an activity such as taking the stairs instead of the lift if they are more directly aware of the benefits? Does the introduction of nature (green plants) as the interface encourage users to participate more actively in such activities associated with social responsiveness? How successful is the plant digital interface in enabling human computer interaction?

ACKNOWLEDGEMENTS

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